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Firmware version 1.00

INSTRUCTION MANUAL

The Safety Power Switch combines two essential functions in one compact device: a high-performance electronic power switch and a telemetry sensor. Thanks to its modern design, it offers a very small footprint while providing a rich feature set.

It is designed to safely turn the electronics in your model on and off. When installed between the battery and the speed controller, it significantly increases safety by reducing the risk of an accidental motor start.

The device also stores its last operating state. If the battery is unplugged and later reconnected, the Safety Power Switch automatically returns to its previous state without any user action.

Features

- Touch switch control, with the option to connect a magnetic, mechanical, or electronic switch.
- Integrated anti-spark for safe battery connection.
- Telemetry support: Duplex EX, Futaba S.Bus2, Multiplex MSB, Graupner Hott, PowerBox P2Bus, FrSky (current, voltage, capacity).
- Auto-restore function: remembers the last ON/OFF state after power loss.
- Easy setup via transmitter or MAV Manager PC software.
- Firmware update support for future improvements.

	SPS 150	**SPS 80**
Dimensions	47,5 x 32,5 x 15,5	47,5 x 32,5 x 15,5
Weight without cables	50g	50g
Weight including cables	110g	75g
Cables	6mm² (10AWG)	4mm² (11AWG)
Connectors	-	-
Continuous current	150A	80A
Peak current (1s)	250A	150A
Standby current	< 100 µA (50 µA at 30V)	
Operating current	10mA	
Operating temperature	-20 – 85°C	
Supply voltage	10 – 59V	
Telemetry supply voltage (Data port)	5-10V	
Telemetry	Duplex EX, Multiplex MSB, Graupner Hott, Frsky F.Port, F.Bus, Futaba S.Bus2,PowerBox P²Bus	
Touch switch support	Yes	
Selectable touch / mechanical switch/ RC switch	Yes	
Power supply for the external switch	6V/100mA (switched DC-DC supply)	
Status LED	Yes	

Note: Pay attention to correct input and output connections. Incorrect wiring may result in damage to the model or electronic components.

Note: Always switch the system ON and OFF using the electronic power switch. Disconnect the battery only after the system has been completely switched off.

Note: Before handling any onboard electronics (especially the ESC), always switch OFF the electronic power switch and disconnect the propulsion battery.

Note: After disconnecting the battery, wait until all connected capacitors have fully discharged.

Note: The antispark circuit startup time is approximately 400 ms (at 60 V). During this time, only a limited current is available to charge the ESC capacitors.

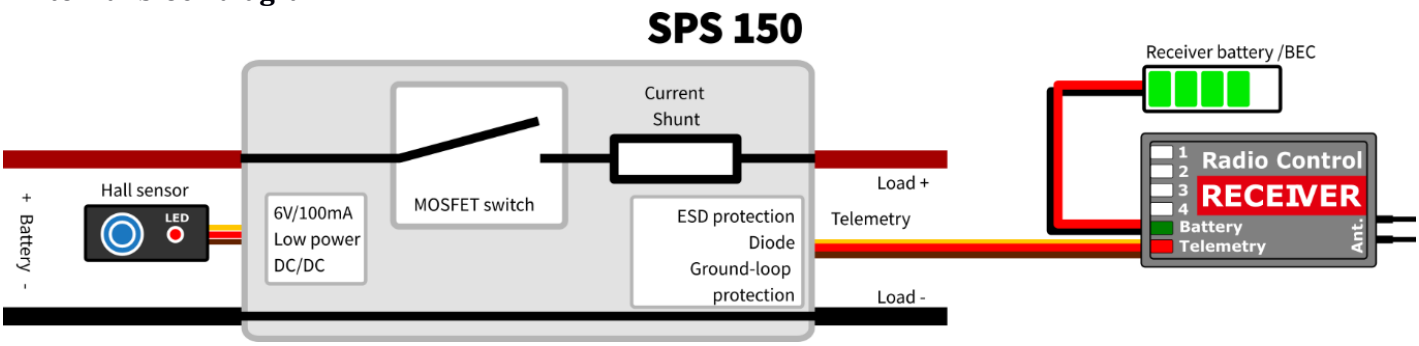
Note: The power switch is equipped with overcurrent protection. This protection does not replace short-circuit protection.

Note: We recommend always disconnecting the propulsion battery from the model during charging. In special cases, the battery may be charged with the Power Switch still connected, provided the switch is in the OFF state and the charger is connected directly to the battery connector.

INSTALLATION

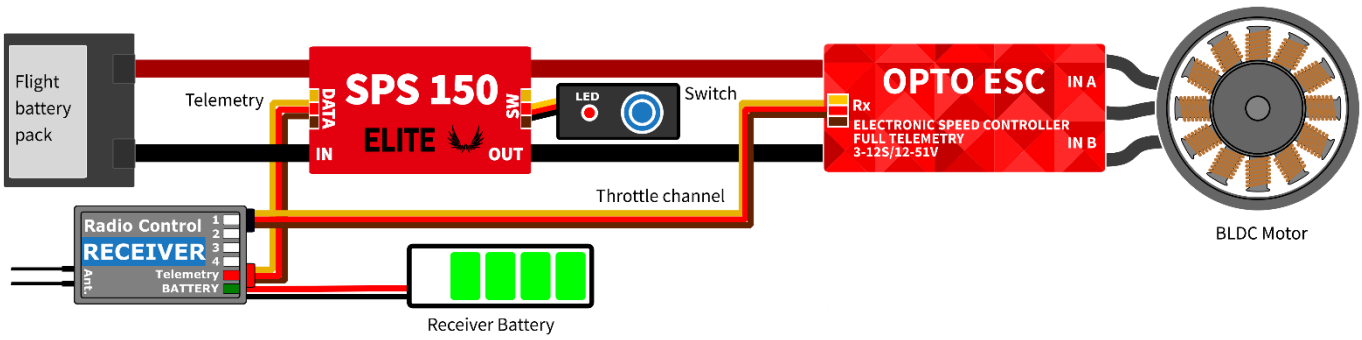
Plug the device between battery and the load (an ESC or a resistive load). Mount the Power Switch using screws or a double-sided tape.

Internal block diagram



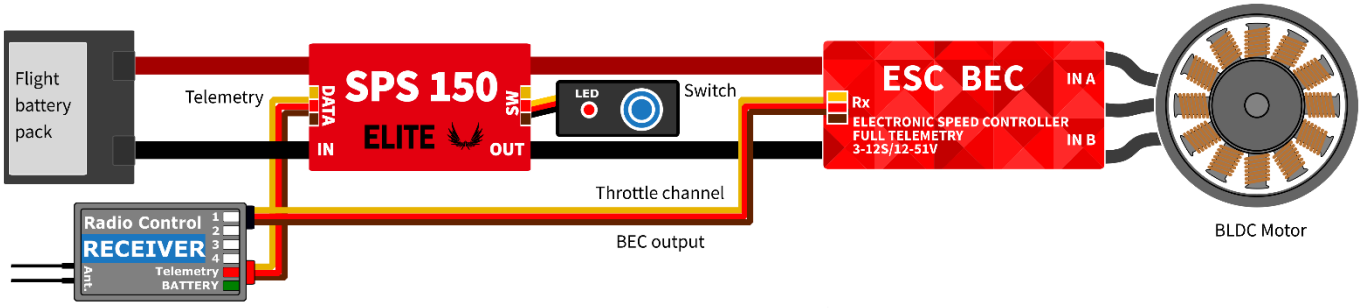
Connecting the controller without BEC (Opto)

When using an opto controller, the receiver and servos must be powered by a separate battery. This battery is independent of the controller and must be switched on and off separately.

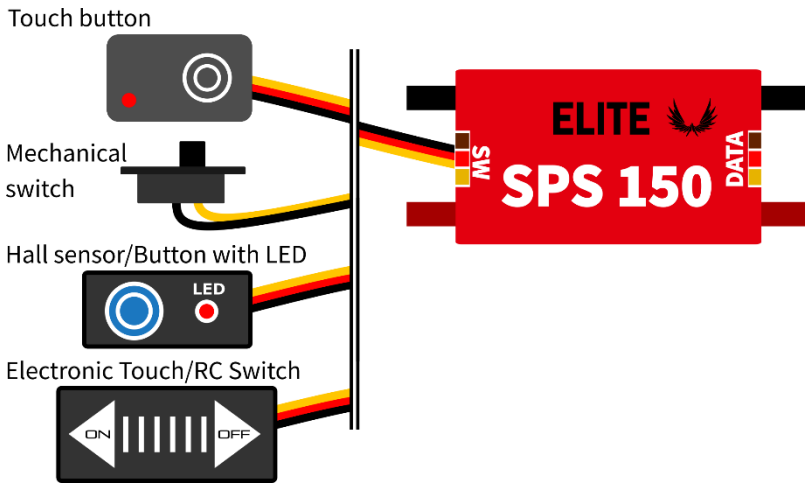


Connecting the controller with BEC

The controller is equipped with an internal BEC that supplies power to the receiver and all connected servos. The receiver and servos are powered automatically when the main battery is connected and SPS is turned on.



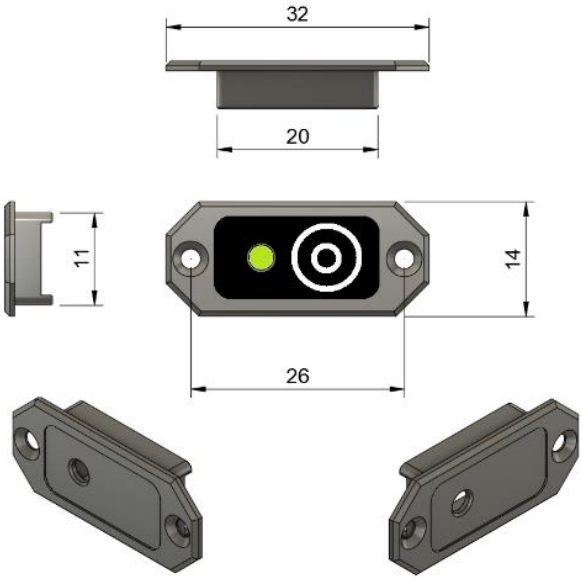
Optional mechanical/electronic switch connection:



If using in combination with **R3/RSW Wireless Switch** you have to change the Power Switch setting from "Touch" to "Electronic" switch option. For long term storage, the battery has to be disconnected due to constant load of the R3/RSW Wireless Switch.

The **Hall/Magnetic Switch** is available as a standard accessory.

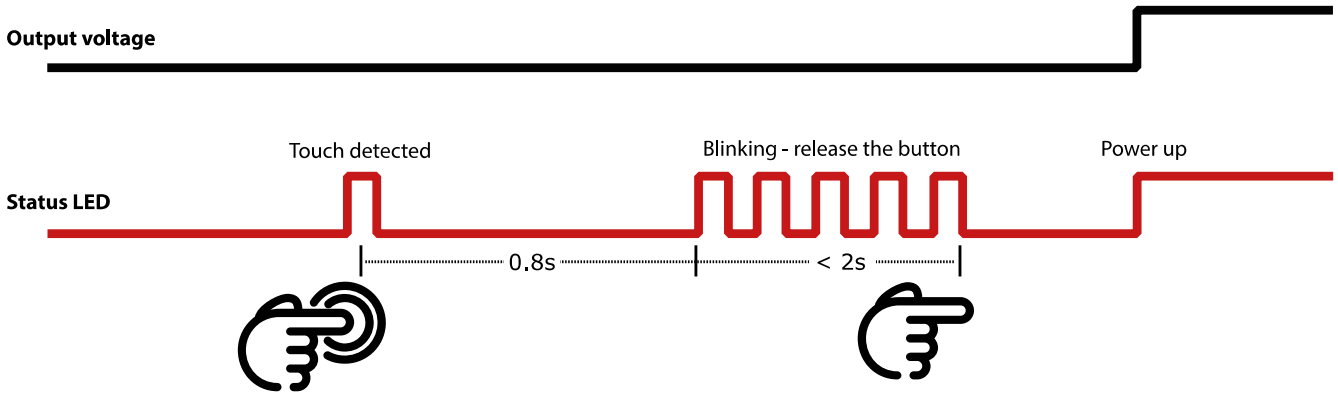
TOUCH SWITCH INSTALLATION



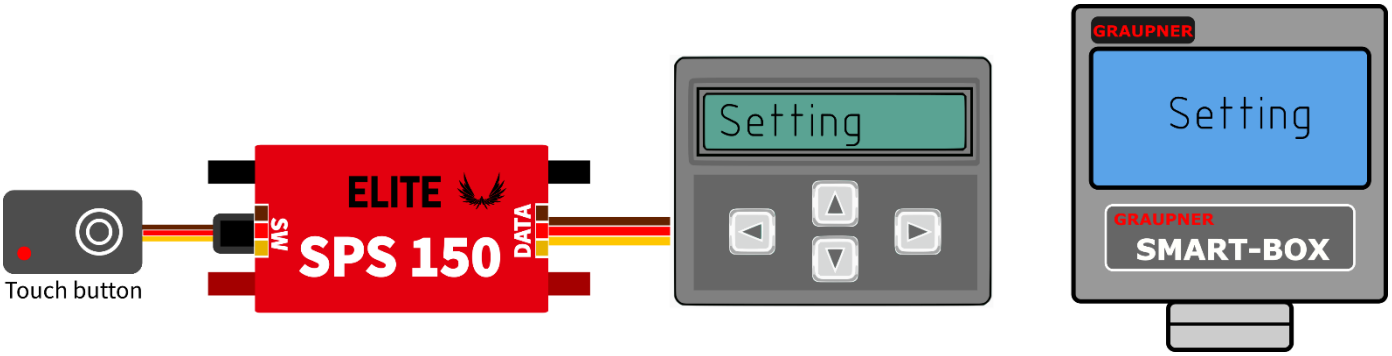
- Place the touch button anywhere on your model on the surface made of nonconductive material.
- Make the status LED visible from outside the fuselage.

Activation Steps

- Connect the battery to the Power Switch and briefly touch the button. Status LED should blink once. If not, please increase the touch sensitivity parameter in the configuration.
- Touch and hold the button for about 2 seconds. After the initial blink, the LED will start blinking again. At this moment, release the button. The main output will be activated.



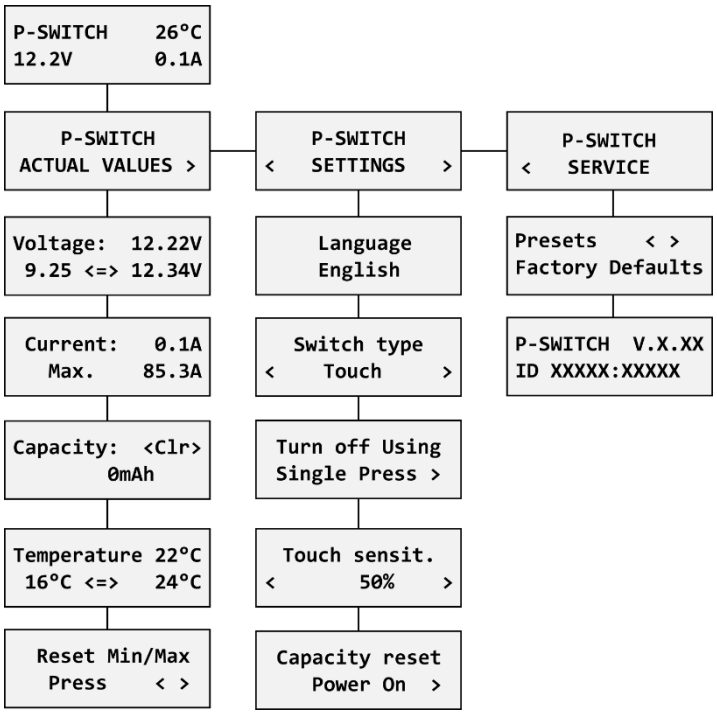
TELEMETRY AND SETTINGS



The device is compatible with JETIBOX/SMART-BOX and you can use it for programming. The JETIBOX menu is divided into three sections:

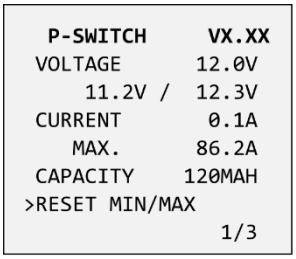
- **Actual values** – displays the latest telemetry values (current, voltage, capacity, temperature) together with minimums and maximums.
    - The main screen shows device temperature together with voltage and current.
    - In the Capacity screen, you can press left+right buttons together to reset the measured capacity.
    - The "Time" screen shows a cumulative time of the battery input, meaning how long the device has been powered on.
    - Reset Min/Max - press left+right buttons together to reset all minimums and maximums.
- **Settings** – basic device settings
    - **Language** – you can choose the language of the JETIBOX screen.
    - **Switch type** (Hall/Button/ Touch/Electronic/Mechanical). You can specify which type of switch will be used to turn the device on and off. If you choose the Electronic option, you can connect any electronic switch with voltage output (e.g. magnetic switch or radio controlled switch).
    - **Turn off Using** (Single Press/Double Press) - it is possible to choose a single-press or double-press option to turn the device on/off using the touch button.
    - **Touch sensitivity** – if the integrated touch switch is used, you can increase its sensitivity by editing this value. Please note that increasing the sensitivity will allow you to install the Power Switch directly inside thicker fuselages. On the other hand, this will also make the touch sensor more vulnerable to erroneous inputs.
    - **Capacity reset** – Setting up this parameter will specify at which moment the capacity is reset to zero. Available options:
        - Power-On (default) – capacity is reset every time after connecting the battery.
        - Voltage-Change – capacity is reset after connecting the battery with different voltage (by 15% or more). This way the sensor may distinguish between charged and discharged battery.
        - Manual – capacity is never reset automatically.
- **Service** – In this menu you can view the device version and reset it to the default factory configuration.

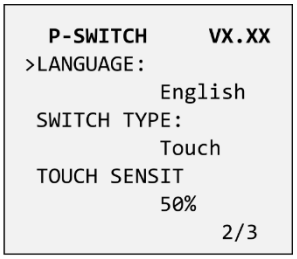
JETIBOX menu structure

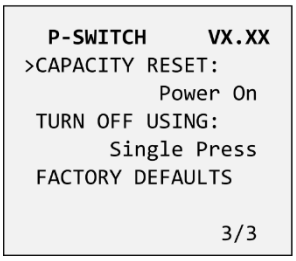


Graupner Hott Menu Structure

The Power Switch offers telemetry as an "Electric Air Module".







Futaba and Multiplex connection

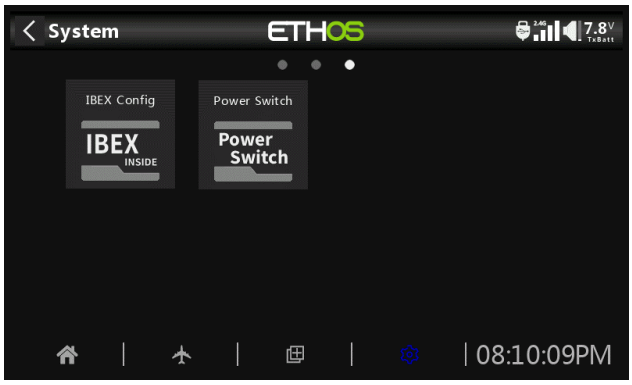
Futaba and Multiplex systems do not offer wireless device configuration. The telemetry transmission is possible with the following fixed sensor slots:

	Futaba S.Bus2	**Multiplex MSB**
Current	2	3
Voltage	3	2
Capacity	4	4
Note	Manual detection in the menu Linkage – Sensor. Choose S1678 current sensor on slot **2**.	Automatically detected by the transmitter.

FrSky Integration

The Power Switch is compatible with FPort and FBus capable receivers, allowing both control, telemetry and configuration capabilities. The switch receives channel information and sends back telemetry data. It can decode all channel data from FBus 8 up to FBus 24, but only the first 16 channels can be used for internal functions.

To configure the Power Switch, the Ethos system (minimum version 1.6) is required. You need to download the corresponding Lua application to your transmitter and place it in the "scripts" folder. Launch the application from the second page of the Configuration menu. Note that only one Power Switch should be connected to the telemetry bus at a time to avoid address conflicts.



The Power Switch Config app is available in the Configuration menu.

The Power Switch main menu displays the device status and offers links to all submenus.

Statistics screen.

Control Settings.

Service menu.

SAFETY INFORMATION

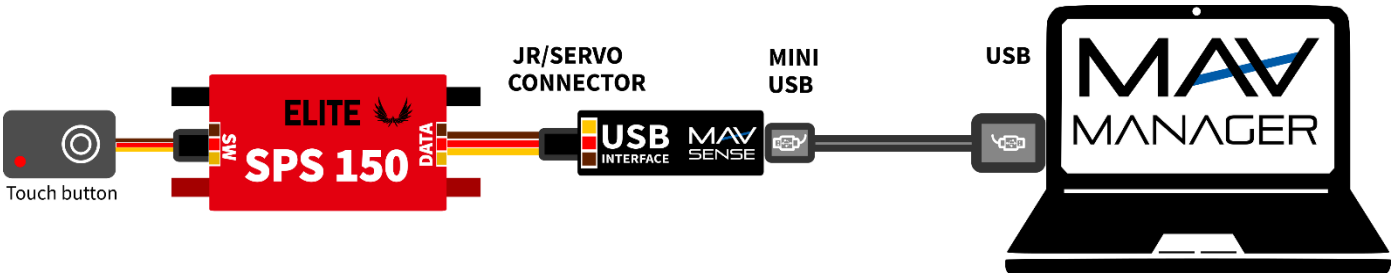
- Operate the Power Switch always in dry environment and within the device limits stated in this guide. Never expose the device to excessive heat or cold.
- Do not remove the encapsulation tube from the device and do not try to implement any changes or modifications. This can lead to a total destruction and to the denial of any warranty claims.
- Always check the polarity of the cables. Never inverse the polarity – this could lead to total destruction.
- Always use a sufficient power source according to the attached load. Never exceed the maximum allowed operating voltage of the electronics.

FIRMWARE UPDATE

Firmware updates for the Power Switch are transferred from a PC via the USB interface. The required programs and files are available at www.esprittech.com

Install the MAV Manager software and the USB drivers on your computer. Check the system requirements.

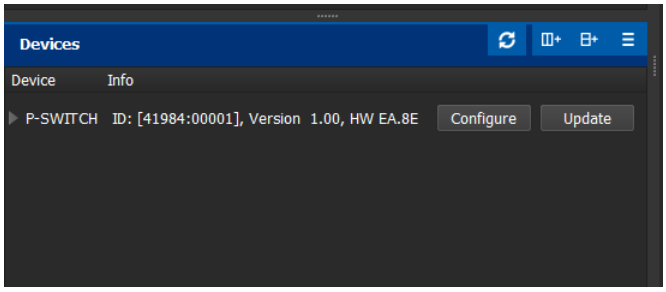
1) Disconnect all devices attached to the Power Switch.
2) Connect the USB interface to your PC, run MAV Manager and select the correct COM Port.
3) Connect the Power Switch according to the picture below.
4) Select the appropriate *.BIN file and press the Update button.



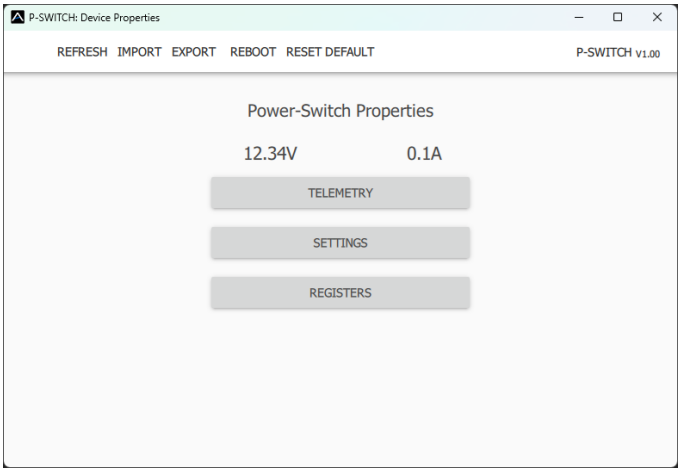
PC CONFIGURATION

It is possible to use the MAV Manager software (1.17.0 and later) to conveniently configure all device settings, display real-time telemetry and make a backup copy of your settings. The configuration menu contains four buttons in the top toolbar:

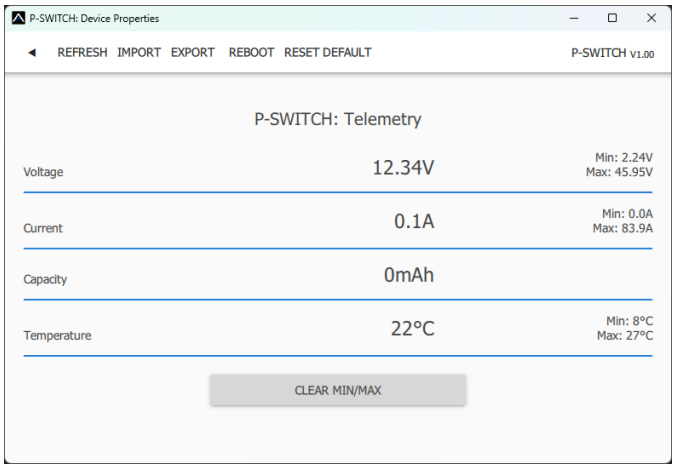
- **Refresh** – forces the configuration to be reloaded from the device.
- **Import** – imports the settings from a file. If you have several devices and want identical settings for all of them, simply import the same settings to each device.
- **Export** – exports the settings from the device to a file. You can easily create a backup configuration stored in your PC. After creating a backup, you may easily experiment with the settings and later revert back to the original configuration by pressing the "Import" button and choosing the original exported file.
- **Reset default** – resets the device to factory defaults and reloads all the settings.



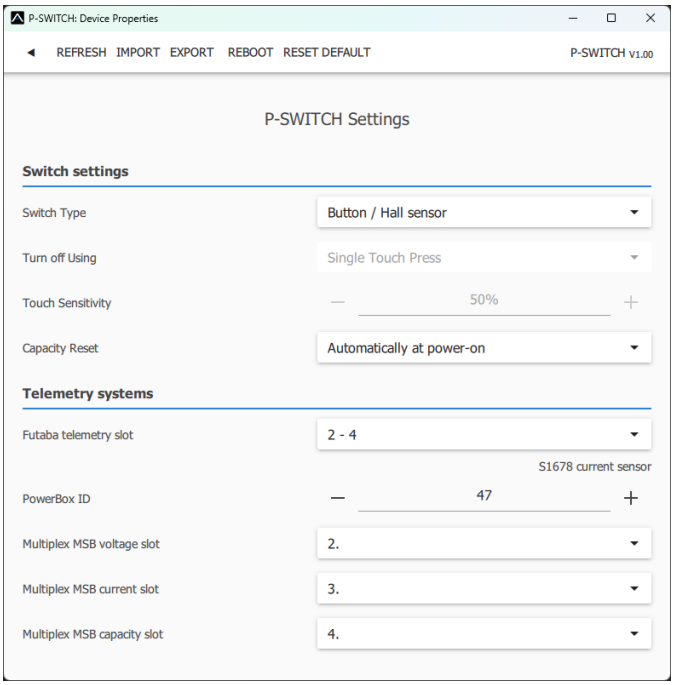
Connect the Power Switch to your PC using the USB interface. The device will be automatically detected by the MAV Manager.



The device properties are available after pressing the "Configure" button.



Real-time telemetry with min/max values. The MAV Manager is also able to create a log file from the real-time telemetry data, which can be viewed, analyzed, imported and exported.



Power Switch settings. Every time you make any change in the configuration, the new value is immediately transferred to the device and saved to memory. There is no need for additional confirmation.

WARRANTY

We grant a warranty of 24 months from the day of purchase under the assumption that they have been operated in conformity with these instructions at recommended voltages and that they were not damaged mechanically. Warranty and post warranty service is provided by the manufacturer.